

# #knowbetter

Understanding nutrition in cancer.



*The information in this companion is adapted for cancer patients.*

*What is a cancer patient?*

*A patient with a cancer diagnosis who is either waiting for or on cancer-directed or symptomatic treatment, and/or receiving palliative care.*

*(adapted from Arends et al. Clin Nutr 2017;17;36(1):11-48.)*



# *BE YOUR BODY'S BEST FRIEND*

---

To be honest, it's a little bit unfair. We typically become aware of our body's needs and peculiarities only when we experience pain, injure ourselves or get sick. That is, when it's no longer "working". Paying attention now is important because it helps us help our body. So, let's try to understand it a little bit better: Let's find out how

it works, what it requires – especially when diagnosed with cancer – and how we can give it exactly what it needs. Let's find out how we can compensate for what it's lacking and what limits it. Paying attention to our body is paying attention to ourselves. To our well-being.

*Let's take the time and try to be  
our body's best friend. This will  
absolutely benefit us!*



# INDEX

---

PREVENT  
WEIGHT LOSS

06

MORE COMMON CAUSES FOR CANCER  
CACHEXIA AND MALNUTRITION

18

MALNUTRITION IN CANCER  
PATIENTS

08

WHAT YOUR BODY NEEDS –  
AND WHY

20

WHY DOES CANCER AFFECT  
YOUR WEIGHT?

14

THE CHANGES IN YOUR BODY CHANGE  
YOUR NEEDS, TOO

22

CAN EMOTIONS AFFECT  
YOUR EATING HABITS?

16

ORAL NUTRITIONAL SUPPLEMENTS AND  
THEIR ROLE IN YOUR DIET

24



# *Prevent weight loss*

For many reasons cancer patients are often affected by unintended weight loss, which can be a sign of malnutrition. Depending on the type of tumor, up to 80% of cancer patients develop malnutrition over the course of their disease. If there are additional signs of inflammation or metabolic changes it can be cancer cachexia. What many see as a minor side effect, means much more than just a harmless loss of weight. It means a loss of physical energy, a loss of quality of life and a loss of chances to regain a better health condition.

*In fact, both malnutrition and cachexia worsen one's therapeutic prospects significantly!*

*Being attentive will pay off.  
Although the positive effects of nutritional  
support are clinically proven and well  
documented, awareness is still slow to rise.  
Thus, we want to support you with valuable  
information.*





## *Malnutrition in cancer patients*

Malnutrition can be explained as a physical state that is caused by a lack of intake or uptake of nutrition. It is a major cause of morbidity and mortality in tumor patients, as it leads to more infections, less treatment tolerance and longer hospital stays.

PREVENTING MALNUTRITION IS REALLY ESSENTIAL FOR YOUR THERAPY.



# Cachexia?

The word "cachexia" comes from ancient Greek and means "bad condition". This is, unfortunately, a very fitting term, as cachexia is a serious problem for cancer patients. It is associated with less physical functioning and tolerance to anticancer treatment.

Cachectic patients mainly lose skeletal muscle and tissue mass. At the same time energy metabolism might be altered. Inflammatory processes can be detected in the blood that affect the entire body.

## INSIGHTS IN A NUTSHELL

The weight loss due to metabolic processes and inflammation is what we call cachexia. If the cause is cancer, it is called "cancer cachexia".

## IT IS A DANGEROUS SPIRAL

People with cancer cachexia may want to eat but are unable to because of anorexia. Due to the lack of nutrition, they suffer from symptoms such as:

- Weakness/febleness
- Fatigue
- Pain
- Lethargy up to depression

**Don't underestimate it** when the scale shows you getting lighter and lighter. Cachexia not only means weight loss, it often means a painful loss of quality of life.



Unless counteracted in time, patients run the risk of finding themselves in a baleful downward spiral: Anorexia accelerates cachexia, cachexia intensifies weakness, weakness intensifies lethargy...

Escaping this vicious circle is hard but fundamental to regaining strength.

**Pre-Cachexia** is a preliminary stage of cachexia with only little weight loss. Still, chronic or recurrent systemic inflammatory response and anorexia or anorexia-related symptoms are part of this condition, which can be detected by blood tests and measuring muscle mass in order to notice a potential loss.



“

# *Am I malnourished?*

## WATCH YOUR WEIGHT

Malnutrition is far beyond counting kilograms. Even overweight cancer patients might be affected! Nevertheless, your weight is a decisive indicator. If it seems useful, note the causes that made it hard for you to eat and drink sufficiently.

**Here are some recommendations for your weight record:**

1. Always use the same scale when weighing yourself.
2. Always weigh yourself under similar conditions (shoes, clothing).
3. Always weigh yourself on the same day of the week at the same time (e. g., before breakfast).
4. If suitable, measure your muscle mass, e. g., with a body composition monitor (note that this method uses electrical impulses and is not allowed for pacemaker patients).

Always remember: Mind your weight, care about your nutritional status to support your therapy and improve its possible outcome!

**AM I MALNOURISHED?**

**ANSWER THESE FOUR QUESTIONS:**

**1. Have you recently lost weight unintentionally?**

**If so, how many kilograms/pounds?**

Your scale will be the first indication. If you've lost weight, not only is the number of kilos/lbs

critical but also how the weight loss progressed. Patients with cancer who unintentionally lose 5% to 10% of their body weight within 3 to 6 months are considered at risk of malnutrition.

As an example: If a patient with an initial weight of 85 kg loses 5 kg within 3 months, incipient malnutrition is indicated.

**2. Is your BMI under 20?**

**3. Do you eat and drink less than before your diagnosis? Have your portions become smaller?**

**4. Is it hard for you to get enough to eat and drink because...**

... you suffer from loss of appetite, inflammation in the mouth, fatigue, nausea, diarrhea, constipation or pain? Because you feel full sooner or because everything just no longer tastes like it used to?

If you answered some of the questions with yes, you could be suffering from malnutrition. Talk to your doctor immediately.

Healthy people are often happy to lose weight. People with cancer shouldn't take it so lightly and always keep an eye on the scale.

Weight is always lost when the supply of energy from food cannot balance the use of energy.

With cancer, the reasons for this discrepancy differ greatly e. g. from fasting. The illness usually affects not just the fat mass, but mainly the skeletal muscle mass.

# *Why does cancer affect your weight?*

## METABOLIC CHANGES

Cancer can cause changes in metabolism. The body responds to the tumor in similar fashion to a foreign body or a wound and initiates a defense mechanism, utilizing certain nutritional components differently than when it was healthy.

The tumor causes a change in your carbohydrate, fat, and protein metabolism. As a result, your body needs **more protein and fat**. At the same time, cytokines reduce hunger and appetite.

## TYPE OF CANCER

Your risk of malnutrition depends also on the type of cancer. Patients with upper gastrointestinal, hematologic, head/neck and lung cancer have the highest risk, whereas hormone-dependent cancers (like breast and prostate cancer) are rarely connected with malnutrition.

## TUMOR TREATMENT

Radiation and chemotherapy or surgery can interfere with food intake. Sense of taste is often altered. Nausea and food intolerances may occur. Many patients also suffer from loss of appetite that can be caused by the treatment.

## AGE

Geriatric patients in general have a higher risk of malnutrition because of age related symptoms like reduced taste. Not only do geriatric patients have a higher risk of malnutrition, but also a higher risk of cancer.

## THE CONSEQUENCES: AS COMPLEX AS OUR BODY. BECAUSE IT'S ALL RELATED

- Cancer-related metabolic disorders often cause weight loss.
- A substantial muscle loss in addition to fat burning is an important difference to healthy people.
- Water retention may occur, which isn't much reflected on the scale.
- You may feel your strength dwindling and no longer feel able-bodied.
- Your body gets increasingly weaker, and your appetite declines. It's a vicious circle.

## *Malnutrition worsens a cancer patient's prognosis.*

The best drugs don't help when your overall and nutritional condition is so bleak that anticancer treatment becomes no longer possible. This is why you should be vigilant.

# *Can emotions affect your eating habits?*

## YES, THEY CAN!

Strong emotions and mental stress contribute to loss of appetite and the development of eating problems. Have you ever felt such heartache or been so stressed that you had no interest in eating at all? It's the same with other emotions.

Facing the uncertainty of cancer and other illnesses may especially lead us to lose interest in and energy for activities that are usually beneficial to us.

It is absolutely normal to feel this way. But there are ways to cope with these emotions – you don't have to suffer with them.

## Typical emotions that affect your eating habits during cancer treatment are

- Anxiety
- Anger
- Helplessness
- Loneliness
- Depression

Do not let them get the upper hand. If you feel overwhelmed by them, talk to someone you trust, your doctor, a dietician, a psychotherapist, or your friends and family – **together you will find ways to break free from them!**



# *More common causes for cancer cachexia and malnutrition*

Most people in treatment experience one or more of the following phenomena that affect the ability to eat or the appetite:

- Constipation
- Diarrhea
- Dry mouth
- Lactose intolerance
- Loss of appetite
- Nausea
- Smell / taste / sense aversions
- Sore mouth
- Sore throat
- Vomiting

Sometimes these physical effects are caused by being stressed about the treatment rather than the treatment itself. In this case, try our tips for coping with feelings to get rid of these effects. Of course, if those effects are caused by your treatment, the only way to fight them is with certain medications your physician will prescribe to you.

Please ask your dietician if the tips you want to try for one or more of the side effects will work for you and are suitable for your nutritional status – some types of cancers and treatments may prohibit certain suggestions.

*Find some general tips to mitigate these side effects in the second part #feelbetter.*

*What your body  
needs – and why*



## | *What your body needs – and why*

Of course, even a well-balanced diet rich in nutrients won't cure cancer, but it can help give you the energy you need now more than ever.

The better your nutritional status, the better your body can take the strain from surgery, radiation and chemotherapy and also the better your immune response functions. All nutrients are important to metabolic processes running smoothly. Deficiencies promote sickness. However, there is a certain "division of labor".

**CARBOHYDRATES** provide a lot of energy quickly. Starch and sugar are the main sources of carbohydrates in our daily diet. Our brain in particular needs them, because it is the only carbohydrate-dependent organ in our body. When we get tired or hungry, it's possible our blood sugar level has dropped. If we don't eat enough carbohydrates, the body can also siphon off valuable protein to meet its energy needs.

**PROTEIN** consists of amino acids and is also the major functional and structural constituent of all the cells in our body. They protect our cells, heal wounds and build up the muscles. Our digestion, immune response and clotting ability rely on adequate protein intake.

**FAT** is the nutrient that contains the most energy. Small amounts pack a lot of calories. The cells in our body, our nerves and various neurotransmitters need fat as a nutrient. Some fatty acids (so-called polyunsaturated omega-3 fatty acids) play a role in our anti-inflammatory pathways. Also: Some vitamins can only be absorbed by the body when fat is also present.

**FIBER** is a plant component that the body can't digest. It's very useful to us, since it regulates digestion and can improve digestive health, our immune protection and our blood cholesterol level. Dietary fiber is also the nutritional basis for our gut bacteria, called the microbiome.

**VITAMINS** are essential substances that the body needs but can't produce itself. They strengthen the body's defenses and our well-being, keep our metabolism going, build up neurotransmitters in the brain and nerves, strengthen bones and tissue, protect the skin and improve our concentration.

**MINERALS AND TRACE ELEMENTS** work with other substances to help renew skin cells, transport substances, regulate blood pressure and water balance, maintenance nerve function, and improve immune protection.

**WATER** is the main component of our body and our most important nutrient. It's involved in our body regulation, hydrates the skin, stimulates immune cells, is a part of the body's fluid balance and transports nutrients.

---

## INSIGHTS IN A NUTSHELL

As different as the nutrients are, the right mix between them is important:

- The more varied your diet, the better your nutrient intake.
- No single food contains every nutrient.
- Your body can only draw on what you give it.
- Make sure you take your time when eating and drinking.

Being conscious about a healthy and well-balanced diet is one of the things you can always do for yourself. It is the basis for maximizing your physical condition and your well-being.

# *The changes in your body change your needs, too*

When you have cancer, your nutritional needs change. Since every type of cancer affects your body in different ways, there is no universal solution for how to adjust your diet. There are, however, some guidelines you can follow.

## **IT'S IMPORTANT THAT YOU EAT.**

Studies show that about every other person diagnosed with cancer reports eating less over the course of their treatment. As you already know, a balanced diet requires balanced nutritional intake.

## **IT'S IMPORTANT WHAT YOU EAT.**

Your tumor can cause changes in your metabolism. The result is that your entire body may suffer from inflammation, which impacts the way nutrients like carbohydrates, fat, and protein are processed and needed.

## **YOU SHOULD RELY ON FAT.**

For many people with cancer, fat is a particularly recommended nutrient. Because of the changes in your metabolism, it is a better energy provider than carbohydrates. If you suffer pancreatic insufficiency, don't forget to take pancreatic lipase enzyme capsules correctly. In this case, ask your doctor or dietician about nutrition counseling and advice.

## **YOU SHOULD KNOW THAT NOT ALL FATS ARE THE SAME.**

Different fats have different properties that determine their nutritional value. Certain omega-3 fatty acids play an important role in a healthy diet: They help positively modulate the inflammatory response, lower blood pressure, stabilize cardiac function and may even prevent depression. Furthermore, they can

stimulate the appetite and may help increase body weight. Their various actions on the metabolism may improve cancer treatment tolerance, thus possibly leading to better treatment outcomes and in the end supporting quality of life.

#### YOUR NEED FOR PROTEIN INCREASES.

Protein protects our cells, is responsible for immune defense, builds up our muscles and transports vital substances within the body. When you have cancer, your need for this important nutrient increases: While 0.8-1 g of protein per kg of body weight per day is sufficient for a healthy person, in cancer patients, this requirement is increased to 1.2 -1.5 g per kg per day\*. This is due to increased inflammatory and immune reactions in the body.

\* given there is no renal insufficiency and protein restriction.

---

#### INSIGHTS IN A NUTSHELL

A diet based on the guidelines on the left and adjusted by your healthcare team may help you avoid the negative effects of malnutrition on tissues, body structure, and organ functions.

Studies show that the overall outcome of the various steps in cancer treatment (from surgery to chemotherapy) might be drastically better if the patient's nutritional status is consistently maintained.

- Side-effects of cancer treatment might be reduced.
- Energy intake (and, with it, body weight) is improved.
- Treatment outcome may improve.
- Overall quality of live may be improved.
- Long-term prognosis may be better.

# *Oral nutritional supplements and their role in your diet*

Since your appetite and eating habits may be drastically altered while in treatment, your current energy intake may not be enough. That's where oral nutritional supplements (ONS) come into play. Their nutritional value adds to your dietary needs and can be used as supplemental food.

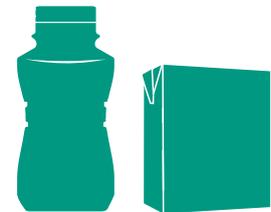
Some products may even replace entire meals if eating is difficult.

The evidence shows that ONS in cancer patients generally help increase energy intake, body weight, and changes in body weight composition and improve some areas of quality of life.

As they strengthen your nutritional status, they help prevent common negative effects\* of malnutrition.

If you are interested in ONS products, please have a look at the Nutricomp® Drink and Remune™ product ranges. Be sure to consult your dietician for the right amount of supplements in your daily diet – ONS's work best if they are part of holistic nutritional counselling.

You will find further information at [www.bbraun.com/feedlife](http://www.bbraun.com/feedlife)



\* Literature: MNI Medical Nutrition Dossier (2018) „Better care through better nutrition: value and effects of medical nutrition. A summary of the evidence base.“ [www.medicalnutritionindustry.com](http://www.medicalnutritionindustry.com)

FORMS OF THERAPY  
Adapted from Reber E et al. (2019)

Parenteral Nutrition

Enteral Nutrition

Oral Nutritional Supplements

Normal food, fortified foods, special diets, nutritional advice

Literature: Reber E, Strahm R, Bally L, Schuetz P, Stranga Z. Efficacy and Efficiency of Nutritional Support Teams. J. Clin. Med. 2019, 8(9):1281.





[www.bbraun.com/feedlife](http://www.bbraun.com/feedlife)



---

Find more information at [bbraun.com/feedlife](https://www.bbraun.com/feedlife)  
and at  [facebook.com/bbrauninternational](https://facebook.com/bbrauninternational)

---

B. Braun Melsungen AG | Hospital Care | 34209 Melsungen | Germany  
Tel. +49 5661 71-0 | [www.bbraun.com](https://www.bbraun.com)